

The Identity of *Phyllurus milii* Bory de Saint Vincent, 1823 (Squamata: Pygopodidae: Diplodactylinae)

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Abstract – The original illustration and descriptions of *Phyllurus milii* Bory de Saint Vincent, 1823 are most likely to be based on *Nephrurus levis occidentalis* Storr, 1963, not the species to which the name *milii* has been consistently applied for nearly 180 years. In the absence of types, a neotype (WAM R34085) is designated, representing the species to which the name *milii* has been applied by all subsequent authors, both for this species and *Gekko dorrensis* Péron, 1807. The senior name is identified as a *nomen oblitum*, and the junior name a *nomen protectum*, stabilising nomenclature of this species.

The Thick-tailed or Barking Gecko, *Nephrurus milii* (Bory de Saint-Vincent, 1823) is a widespread, large and readily identifiable species of southern Australia. Although the generic name has been subject to some debate, the species having been variously assigned to the genera or subgenera *Phyllurus* (e.g., Bory de Saint-Vincent, 1823, 1825; Gray, 1845, 1867; Underwood, 1954; Russell, 1980), *Anomalurus* (Fitzinger, 1843), *Gymnodactylus* (e.g., Duméril and Bibron, 1836; Boulenger, 1885; Zietz, 1920), *Underwoodisaurus* (e.g., Wermuth, 1965; Cogger, 1975; Cogger *et al.*, 1983) or most recently, *Nephrurus* (e.g., Bauer, 1990; Bauer and Henle, 1994; Kluge, 1991, 1993), the species name has been consistently applied since 1823, although variously misspelt on occasion as *nili*, *miliusii*, *myliusii*, *millius* or *milusii* (see Bauer and Henle, 1994). Since 1934 (Loveridge, 1934), the specific epithet has mostly been correctly spelt.

The species was named for Lieutenant-commander (later Baron) Pierre-Bernard Milius of Bordeaux, second-in-command of the corvette *Naturaliste*, one of two original ships of the French Baudin Expedition of 1800–1804 to Australian waters, with Bory de Saint-Vincent himself, also of Bordeaux, being one of two zoologists on the same ship (Cornell, 1974). Bory de Saint-Vincent (1825, 1828) credited Milius with the discovery of the species, and for providing the colour plate drawn from life which accompanies the description. There is no evidence that Milius visited Australia, and more specifically the type locality (see below), other than with the Baudin Expedition.

Bory de Saint-Vincent's description of this species was published in a popular encyclopedia of natural history several years after the premature death of Francois Péron (zoologist on the other ship of the

Expedition, the *Géographe*) who had been preparing the zoological results of the Expedition for publication. The name appears three times in the encyclopedia, with a text account in volume 7 (Bory de Saint-Vincent, 1825: 183–184), another account in volume 13 (Bory de Saint-Vincent, 1828: 464–465), and a plate in the atlas, numbered the last volume in the series. Brygoo (1991) stated that the plate, although included in a volume with a title page date of 1831, was actually published as the first livraison of this volume in July 1823. Consequently, the plate validates the name, which must be regarded as published in 1823, with the illustrated specimen the holotype.

Two large gecko species of similar proportions co-exist in the Shark Bay region, including both Bernier and Dorre Islands: *Nephrurus milii* and *Nephrurus levis occidentalis* Storr, 1963 (Storr and Harold, 1978). As no type material can be identified (see below), the identity of the gecko named by Bory de Saint-Vincent must be based on his description and the accompanying plate, and primarily on the latter.

Bory de Saint-Vincent (1825) stated:

PHYLLURE DE MILIUS, *Phyllurus Milii*, N. (V. pl. de ce Dict.) Notre ancien et illustre ami le capitaine de vaisseau Milius, ci-devant gouverneur de Mascareigne, maintenant chargé du bonheur de la Guiane française, a découvert cette espèce dans l'Australasie sur les rives de la baie des Chiens-Marins; nous lui en devons la figure et la description. Plus petite que la précédente, mais proportionnellement plus haute sur jambes, sa tête est obtuse, sa couleur d'un rouge de brique en dessus, qui ne permet que difficilement de la distinguer sur la terre rougeâtre où elle se tenait. Une sorte de demi-collier noir à trois bandes la rend fort remarquable, ainsi que la forme obtuse de sa



Figure 1 Monochrome reproduction of the colour type illustration of *Phyllurus milii* by Bory de Saint-Vincent (1823).

tête, et l'extrême grosseur de ses yeux, caractères par lesquels elle diffère surtout du Phyllure de Cuvier. La queue n'est d'ailleurs pas si pointue, et loin d'être cordée, elle est comme spatuliforme, et la pointe qui la termine paraît d'autant plus remarquable que la partie élargie en est plus plate et plus ronde.

[Our old and renowned friend, captain Milius, former governor of Madagascar, lately charged with the goodwill of French Guiana, discovered this species in Australia on the shores of Shark Bay; we owe to him the figure and the description. Smaller than the previous [*Phyllurus Cuvieri*, = *Phyllurus platurus*], but proportionally taller on the limbs, its head is blunt, its color of a brick red above, which only allows it to be distinguished with difficulty on the reddish ground which it inhabits. A sort of black half-collar with three bands makes it very remarkable, also the blunt form of its head, and the great size of its eyes, characters by which it differs completely from the Phyllure of Cuvier. The tail is not quite so pointed, and far from being cordiform, the point which it ends in seems more remarkable than the enlarged part which is very flattened and rounded.]

Bory de Saint-Vincent (1828) gives an essentially similar description that provides a few additional details (head brown; two dark marks over the hip, and scattered small white tubercles over the skin):

PHYLLURE DE MILIUS, *Phyllurus (Milius) aurantiaca, verruculosa, capite fusco, caudâ spatulatâ*, N; V. pl. de ce Dictionnaire. Cette espèce, plus petite que la précédente, nous a été communiquée par le capitaine de vaisseau Milius qui la découvrit, et la dessina vivante sur les plages de la baie des Chiens-Marins. Sa couleur orangée, tirant sur la teinte de brique, lui facilitait les moyens de se tenir inaperçue à la surface du sol rougeâtre, sur lequel elle était en repos aux ardeurs du soleil. Sa tête est brune, trois

lignes transversales noires forment sur le cou comme des demi-colliers, et deux marques pareilles se voient à l'insertion de la queue qui est spatulée, mais mucronée en même temps. De petits tubercules perlés et blanchâtres couvrent le peau.

Although Bauer (1990) considered that the description was unequivocally conspecific with the animal to which the name has been consistently applied, I do not believe this to be the case. Indeed, I consider that the plate accompanying the description (Figure 1), although grotesque, is more likely to represent *Nephrurus levis occidentalis*. The general coloration of the lizard painted, with a predominance of pink tones, lack of any pale transverse bands on the tail, restriction of transverse colour elements on the body to the nape and tail base, and randomly scattered fine pale spotting (*vs.* transversely oriented lines of larger pale tubercles), agrees with *N. l. occidentalis* rather than *N. milii* (Figure 2; see also color plates in Storr *et al.*, 1990). The only feature of the plate that more closely resembles the latter species over the former is the lack of a terminal knob to the tail. Given the lack of detail to morphology in the plate, this could easily be an oversight on the part of the artist.

It is clearly undesirable to destabilise over a century and a half of consistent application of the name *milii* to the Thick-tailed Gecko, over a century of consistent application of the name *Nephrurus levis* to the Smooth Knob-tailed Gecko and almost four decades of use of the subspecies name *occidentalis* for the Shark Bay population of the latter species (see Bauer and Henle, 1994, for a partial list of usage of these names), by recognising *Phyllurus milii* as a senior synonym of *Nephrurus levis occidentalis*. Stability of nomenclature is best served by maintaining current usage of the specific epithet *milii*.

No type has been previously identified for *Phyllurus milii* (Guibé, 1954; Cogger *et al.*, 1983;



Figure 2 A. Neotype of *Phyllurus milii* (WAM R34085); B. *Nephurus levis occidentalis* from 32.2 km SE Onslow, WA.

Bauer, 1990; Brygoo, 1991; Bauer and Henle, 1994), and there are no identifiable Baudin Expedition specimens of either species that could represent potential types in the collection of the Museum Nationale d'Histoire naturelle, Paris (Roux-Estève, 1979; pers. obs.), which houses other Baudin Expedition herpetological specimens, or in the Nationaal Natuurhistorisch Museum, Leiden, which received some of the Baudin Expedition herpetological specimens on exchange (pers. obs.). It is possible that the specimen drawn by Milius was released or discarded following completion of the drawing. Hence, the opportunity exists to designate a neotype concordant with current usage to fix the name.

Consequently, I designate Western Australian

Museum specimen R34085, from Bernier Island, Shark Bay, as neotype of *Phyllurus milii* Bory de Saint-Vincent, 1823. The mature, but reproductively inactive female (Figure 2A), with snout-vent length 93 mm, is typical of the species to which the name has been subsequently applied, and is from a locality commensurate with the original type locality. Bernier and Dorre Islands were visited by the Baudin Expedition between 28 June and 11 July, 1801 (Cornell, 1974). The only other Shark Bay site at which the Baudin Expedition landed was Peron Peninsula, between 18 and 22 March, 1803 (Cornell, 1974).

One other action is necessary to stabilise nomenclature of this species.

Although Francois Péron did not live to complete the zoological results of the Baudin Expedition, he

did include in his general account of the expedition (Péron, 1807) a brief preliminary comment on three lizard species collected by the Expedition during its time at Bernier and Dorre Islands. One of these was a gecko, named by Péron *Gecko Dorreensis*. The latter name was accompanied only by a measurement ("10 à 13 centimètres (4 à 5 pouces)"). As Péron reported only a single gecko species collected at Shark Bay by the Baudin Expedition, it is likely that Bory de Saint-Vincent and Péron's names apply to the same large species. Although generally regarded as a *nomen nudum* (Douglas and Ride, 1962, Cogger *et al.*, 1983, Bauer and Henle, 1994), the provision of a diagnostic measurement validates the name for the purposes of nomenclature. In order to stabilise application of the name, I further designate WAM R34085 as neotype of *Gecko dorreensis* Péron, 1807.

As *milii* has been used as the valid name for the species to which both names apply, by over ten authors in more than 25 publications over the previous half-century (see Bauer and Henle, 1994 for list), while *Gecko dorreensis* has not been used as the valid name for this taxon since its first publication, I consider *Phyllurus milii* a *nomen protectum* and *Gecko dorreensis* a *nomen oblitum*. This action is taken in accordance with Article 23.9.1 of the Fourth Edition of the Code of Zoological Nomenclature. This stabilises usage of the name *milii* for this species by preventing use of the senior synonym.

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REFERENCES

- Bauer, A.M. (1990). Phylogenetic systematics and biogeography of the Carphodactylini (Reptilia: Gekkonidae). *Bonner Zoologische Monographien* No. 30: 1-219.
- Bauer, A.M. and Henle, K. (1994). Familia Gekkonidae (Reptilia, Sauria). Part 1 Australia and Oceania. *Das Tierreich* No. 109: 1-306.
- Bory de Saint-Vincent, [J.B.G.M.] 1823. Phyllure de Milus, *Phyllurus Milii*, Bory. In, [J.V.] Audouin, A.[T.] Brongniart, [J.] Cambessèdes, [A.L.P.P.] De Candolle, G. Delafosse, [G.P.] Deshayes, [J.L.A. Loiseleur-Deslon(g)champs, [P.A.J.] Drapiez, [W.F.] Edwards, H.-M. Edwards, A.[L.A.] Fée, G. Saint-Hilaire, I.G. Saint-Hilaire, [F.E.] Guérin[-Méneville], [A.] Guillemin, A. De Jussieu, [C.S.] Kunth, [P.A.] Latreille, [R.P.] Lesson, [L.]C. Prévost, [A.] Richard, and [J.B.G.M.] Bory de Saint-Vincent, *Dictionnaire classique d'Histoire naturelle*. Vol. 17. *Atlas et Illustration des Planches*: Plate CXX, Figure 1. Rey et Gravier, Paris [printed and distributed as Plate IV, Figure 1 of the first livraison]
- Bory de Saint-Vincent, [J.B.G.M.] (1825). *Gecko*. In, [J.V.] Audouin, I. Bourbon, A.[T.] Brongniart, [A.L.P.P.] de Candolle, [A.E.J.P.J.F.] d'Audebard de Férussac, [G.P.] Deshayes, [L.A.] Desmoulins, [P.A.J.] Drapiez, [J.B.A.] Dumas, [W.F.] Edwards, A. Fée, [M.J.P.] Flourens, G. Saint-Hilaire, I.G. Saint-Hilaire, [F.E.] Guérin[-Méneville], A. Guillemin, A. de Jussieu, [C.S.] Kunth, G. De La Fosse, [J.V.F.] Lamouroux, [P.A.] Latreille, C. Prévost, A. Richard and [J.B.G.M.] Bory de Saint-Vincent, *Dictionnaire classique d'Histoire naturelle*. Vol. 7 (*Four-G.*): 180-184. Rey et Gravier, Paris.
- Bory de Saint-Vincent, [J.B.G.M.] (1828). Phyllure. In, [J.V.] Audouin, I. Bourbon, A. Brongniart, [A.L.P.P.] de Candolle, G. Delafosse, [G.P.] Deshayes, [J.L.A. Loiseleur-Deslon(g)champs, [P.A.J.] Drapiez, [J.B.A.] Dumas, [W.F.] Edwards, H.-M. Edwards, A. Fée, G. Saint-Hilaire, I.G. Saint-Hilaire, [F.E.] Guérin[-Méneville], [A.] Guillemin, A. de Jussieu, [C.S.] Kunth, [P.A.] Latreille, [R.P.] Lesson, C. Prévost, A. Richard and [J.B.G.M.] Bory de Saint-Vincent, *Dictionnaire classique d'Histoire naturelle*. Vol. 13 (*Pan-Piv*): 464-465. Rey et Gravier, Paris.
- Boulenger, G.A. (1885). *Catalogue of the Lizards in the British Museum (Natural History)*. Vol. I. *Gekkonidae, Eublepharidae, Uroplatae, Pygopodidae, Agamidae*. Trustees of the British Museum, London.
- Brygoo, É. R. (1991). Les types de gekkonidés (Reptiles, Sauriens) du Muséum national d'Histoire naturelle. Catalogue critique. *Bulletin du Muséum national d'Histoire naturelle, Paris A. Zoologie, biologie et écologie animales* (4)12(3-4, supplement):19-141.
- Cogger, H.G. (1975). *Reptiles and amphibians of Australia*. A.H. & A.W. Reed, Sydney.
- Cogger, H.G., Cameron, E.E. and Cogger, H.M. (1983). *Zoological Catalogue of Australia*. Vol. 1. *Amphibia and Reptilia*. Australian Government Publishing Service, Canberra.
- Cornell, C. (1974). *The Journal of Post Captain Nicolas Baudin Commander-in-Chief of the Corvettes Géographe and Naturaliste assigned by order of the Government to a voyage of discovery*. Libraries Board of South Australia, Adelaide.
- Douglas, A.M. and Ride, W.D.L. (1962). Reptiles. pp. 113-119 In A.J. Fraser (ed.), *The Results of an Expedition to Bernier and Dorre Islands Shark Bay, Western Australia in July, 1959*. Western Australian Fisheries Department Fauna Bulletin No. 2: 1-131.
- Duméril, A.M.C. and Bibron, G. (1836). *Erpétologie Générale ou Histoire Naturelle Complète des Reptiles*. Vol. 3. Librairie Encyclopédique de Roret, Paris.
- Fitzinger, L. (1843). *Systema Reptilium. Fasciculus primus Amblyglossae*. Braümüller et Seidel, Vindobonae.
- Gray, J.E. (1845). *Catalogue of the specimens of lizards in the collection of the British Museum*. Edward Newman, London.
- Gray, J.E. (1867). *The lizards of Australia and New Zealand in the collection of the British Museum*. Bernard Quaritch, London.

- Guibé, J. (1954). *Catalogue des types de lézards du Muséum National d'Histoire Naturelle*. Colas, Bayeux.
- Kluge, A.G. (1991). Checklist of gekkonoid lizards. *Smithsonian Herpetological Information Service* No. 85: 1–35.
- Kluge, A.G. (1993). *Gekkonoid Lizard Taxonomy*. International Gecko Society, San Diego.
- Loveridge, A.A. (1934). Australian Reptiles in the Museum of Comparative Zoölogy, Cambridge, Massachusetts. *Bulletin of the Museum of Comparative Zoölogy* 77: 243–383 + plate.
- Péron, F. (1807). *Voyage de Découvertes Aux Terres Australes, exécuté par ordre de Sa Majesté l'Empereur et Roi, Sur les Corvettes le Géographe, le Naturaliste, et la Goëlette le Casuarina, Pendant les Années 1800, 1801, 1802, 1803 et 1804*. Vol. I. Imprimerie Impériale, Paris.
- Roux-Esteve, R. (1979). Liste des amphibiens et reptiles des collections du Muséum National d'Histoire Naturelle de Paris, récoltés par Lesueur (1778–1846). *Bulletin trimestriel de la Société Géologique de Normandie et des Amis du Muséum du Havre* 66(3): 25–29.
- Russell, A.P. (1980). *Underwoodisaurus* Wermuth 1965, a junior synonym of *Phyllurus* Schinz 1822. *Journal of Herpetology* 14: 415–416.
- Storr, G.M. and Harold, G. (1978). Herpetofauna of the Shark Bay region, Western Australia. *Records of the Western Australian Museum* 6: 449–467.
- Storr, G.M., Smith, L.A. and Johnston, R.E. (1990). *Lizards of Western Australia III. Gekkos and Pygopods*. Western Australian Museum, Perth.
- Underwood, G.A. (1954). On the classification and evolution of gekkos. *Proceedings of the Zoological Society of London* 124: 469–492.
- Wermuth, H. (1965). Liste der rezenten Amphibien und Reptilien. Gekkonidae, Pygopodidae, Xantusiidae. *Das Tierreich* No. 80: 1–246.
- Zietz, F.R. (1920). Catalogue of Australian lizards. *Records of the South Australian Museum* 1: 181–228.